

Etihad Engineering unveils 3D printing lab

Etihad Engineering has collaborated with EOS and BigRep, both leading 3D printing technology providers, to open the region's first additive manufacturing facility with Design and Production Approval from the European Aviation Safety Agency (EASA).



Image via [Etihad Engineering](#)

The laboratory, located at the Etihad Engineering facility adjacent to Abu Dhabi International Airport, features two approved industrial 3D printers. The laboratory's primary machine is the powder-bed fusion technology system EOS P 396, for demanding high performance and high-quality aircraft applications. In contrast to traditional manufacturing processes, it enables faster production and reduced weight of cabin parts.

As an MRO solutions provider committed to continuously enhancing the service value it offers to the market and its customers, this month, Etihad Engineering, together with its partner EOS, received one of the first Airline MRO approvals from EASA for 3D printing using powder-bed fusion technology which will be used to design, produce and certify additively manufactured parts for the aircraft cabin of the future.

Bernhard Randerath, VP Design, Engineering and Innovation, Etihad Engineering, commented: "The launch of the new facility is in line with Etihad Engineering's position as a leading global player in aircraft engineering as well as a pioneer in innovation and technology. We are extremely proud to collaborate with EOS and BigRep to expand our capability and support the UAE's strategy to increase production technology and cement its position as a global aerospace hub."

Aircraft interior design and production

Markus Glasser, senior vice president, export region, EOS, said: "Being committed to high-quality solutions and constant technology innovation, Etihad Engineering and EOS share the same mindset. Together, we want to bring the design and production of aircraft interior parts to the next level." Glasser continues: "Producing cabin interior parts additively will offer a substantial value-add in terms of optimised repair, lightweight design, shorter lead times and customisation, addressing some of the key challenges of the aerospace industry."

The newest system installed by EOS produces serial parts from polymer materials such as PA 2241 FR and enables the manufacture of cabin parts for an aircraft's heavy maintenance C-Check. Cabin defects can also be rectified within a short turnaround time which allows for the production of the required cabin parts during line maintenance.

The EOS machine operates with a total build volume of 340 x 340 x 600mm. The modular and highly productive system enables the tool-free manufacture of serial components, spare parts, functional prototypes and models directly from CAD data.

The second machine is the BigRep ONE, one of the largest, serial-built industrial thermoplastic extrusion 3D printers. Bringing additive manufacturing to MRO, the ONE is designed for manufacturing large parts, jigs and fixtures as well as moulds – on-site and on-demand.

"Our 3D printers have established 3D printing and AM as an innovative, added-value technology in the aviation industry. They offer an unprecedented level of precision, quality and speed, and enable us to use the high-performance, innovative printing materials the aviation industry requires," said Martin Back, BigRep managing director. "Together with Etihad Engineering, we will develop the full potential of AM. In the next phase, a BigRep PRO, the most advanced large-format FFF 3D printer will be installed."

The facility was officially opened in a ceremony attended by His Excellency Ernst Peter Fischer, German Ambassador to the UAE in recognition of the relationship between the German companies EOS and BigRep and the UAE's Etihad Engineering.

Etihad Engineering first received EASA approval to 3D print with filament technology in 2017 and was the first airline MRO in the world to certify, print and fly 3D printed cabin parts. The latest approval received in October 2019 covers powder bed fusion 3D printing technology.

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